

## **Amendments to the Claims**

This list of claims will replace all prior versions, and listings, of claims in the application.

### **Listing of Claims:**

Claims 1- 18 (cancelled)

Claim 19 (new) A system for recording, transmitting and analyzing data and information generated by electromagnetic radiation that originates from at least one impulse source, comprising a plurality of spatially separated measuring stations, each comprising at least one antenna body for recording signals attributed to electromagnetic radiation and a time measurement device for determining the arrival time and time progression of said recorded signals, wherein the altitude of said impulse source and/or the directionality of the impulse emission caused by said impulse source may be localized based on the deviation between the arrival time of the signal at the measuring station located closest to said impulse source and the arrival time of the signal at each of the remainder of said plurality of measuring stations which are not located closest to said impulse source, and wherein said directionality is determined to be essentially vertical when the amplitude of the received signal at each of said plurality of measuring stations varies in inverse proportion to the distance between each respective measuring station and said impulse source and wherein said directionality is determined to be essentially horizontal when the amplitude of the received signal at each of said

plurality of measuring stations deviates from said inverse proportionality and said deviation can be corrected based on the altitude angle, and the angle between the impulse emission axis and the direction to the respective measuring station.

Claim 20 (new) The system according to claim 19, wherein a plurality of received signals which originate from impulse sources in a spatially limited and/or time limited range can be combined, and that the deviation of the amplitude of an individual received signal can be correlated with the group assigned to the signal.

Claim 21(new) The system of claim 19 wherein with an impulse emission from altitudes in the kilometer range, using comparisons of distributions of time deviations measured on at least one measuring station located closest to said impulse source, and on at least two measuring stations which are not located closest to said impulse source, at least two discharge times are detectable.

Claim 22 (new) The system of claim 19, wherein the altitude of the impulse source and/or the directionality of the impulse emission is determinable using a first measuring station that is located closest to the impulse source, and a second measuring station which is not located closest to the impulse source, when the incident direction of the impulse emission is determinable.

Claim 23 (new) The system of claim 19, wherein each of said plurality of measuring stations comprise at least one station electronic system arranged separately from the

antenna body for processing the recorded signals into digital data, wherein the station electronic system comprises at least one amplification unit for the low-noise amplification of the signals recorded using said antenna body; at least one filter unit for filtering said amplified signals and at least one Analog/Digital converter unit for converting the filtered signals and at least one self-regulating threshold for optimizing the sensitivity of said station electronic system.

Claim 24 (new) The system of claim 19 wherein said recorded signal is provided with at least one time identification, and is analyzed such that a plurality of time and/or structural samples is created.

Claim 25 (new) The system of claim 19, wherein said antenna body is designed for installation in the open air in a mechanically self-supporting form, without movable and/or weather-sensitive components, that the primary circuit of said antenna body is galvanically separated from the secondary circuit of said antenna body, and that the electromagnetic fields are broadband and can be decoupled with low noise, and can therefore be measured with time accuracy.

Claim 26 (new) The system of claim 19 wherein said measuring stations are arranged at a distance of approximately one hundred kilometers from each other, and each is in communication with a central station, to which at least a portion of said digital data can be transmitted.

Claim 27 (new) The system of claim 19, further comprising at least one interface for incorporating at least one additional climatological and/or meteorological data and information source for characterizing the overall weather situation.

Claim 28 (new) The system of claim 19, wherein said electromagnetic radiation comprises low frequency radiation.

Claim 29 (new) A method for recording, transmitting and analyzing data and information generated by electromagnetic radiation, where said electromagnetic radiation originates from at least one impulse source, comprising:

- a. recording, using a plurality of spatially separated measuring stations, signals attributed to said electromagnetic radiation using an antenna body which is assigned to the respective measuring station;
- b. determining the respective time progression and arrival time of the recorded signals using at least one time measurement device, which is assigned to the respective measuring station, and
- c. localizing the altitude of the impulse source, and/or the directional information of the impulse emission created by the impulse source by determining the difference between the arrival time of the signal at the measuring station located closest to the impulse source and the arrival time of the signal at each of the remainder of said plurality of measuring stations which are not located closest to said impulse

source, whereby the directional information of the impulse emission is identified as being essentially vertical, when the amplitude of the received signal at each of said plurality of measuring stations varies in inverse proportion to the distance between each respective measuring station and said impulse source, and is identified as being essentially horizontal, when the amplitude of the signal deviates from inverse proportionality, wherein this deviation can be corrected based on the altitude angle, and the angle between the discharge axis, and the direction to the respective measuring station.

Claim 30 (new) The method of claim 29, whereby the impulse emissions within a cloud and/or between at least two clouds can be differentiated from impulse emissions between the cloud and the earth.

Claim 31 (new) The method of claim 29, further comprising providing a station electronic system, whereby using said station electronic system, the electromagnetic radiation which typically occurs in individual waves is analyzed in relation to its spectral properties using Fast Fourier Transformation, said respective time progression of the signals is recorded in full with variable pulse forms, all signals are recorded continuously, and signal-specific parameters for classifying and assigning the signals to specific atmospheric processes are determined.

Claim 32 (new) The method of claim 29, whereby the signals which arrive at each of said measuring stations

are provided with at least one precise time identification, further comprising determining the deviation between the arrival time of the signal at the measuring station located closest to the impulse source and the arrival time of the signal at each of the remainder of said plurality of the measuring stations not located closest to the impulse source using said time identification.

Claim 33 (new) The method of claim 29, further comprising calibrating at least one measuring station.

Claim 34 (new) The method of claim 33, further comprising:

- a. Localizing the position of the impulse source such that the respective difference of runtime of impulses from said impulse source to each measuring station is determined from the calculated respective time progression,
- b. Calculating the respective arrival time of the signals originating from the localized impulse source and recorded on the measuring station to be calibrated;
- c. Determining the difference between said calculated respective arrival time, and said determined respective arrival time, of the signals originating from the localized impulse source and recorded on the measuring station to be calibrated in a statistically meaningful manner, and

- d. Determining, if necessary due to the determined respective difference, at least one time correction term, and
- e. Adjusting the measuring station to be calibrated using this determined time correction term.

Claim 35 (new) The method of claim 29, wherein said electromagnetic radiation comprises low frequency radiation.